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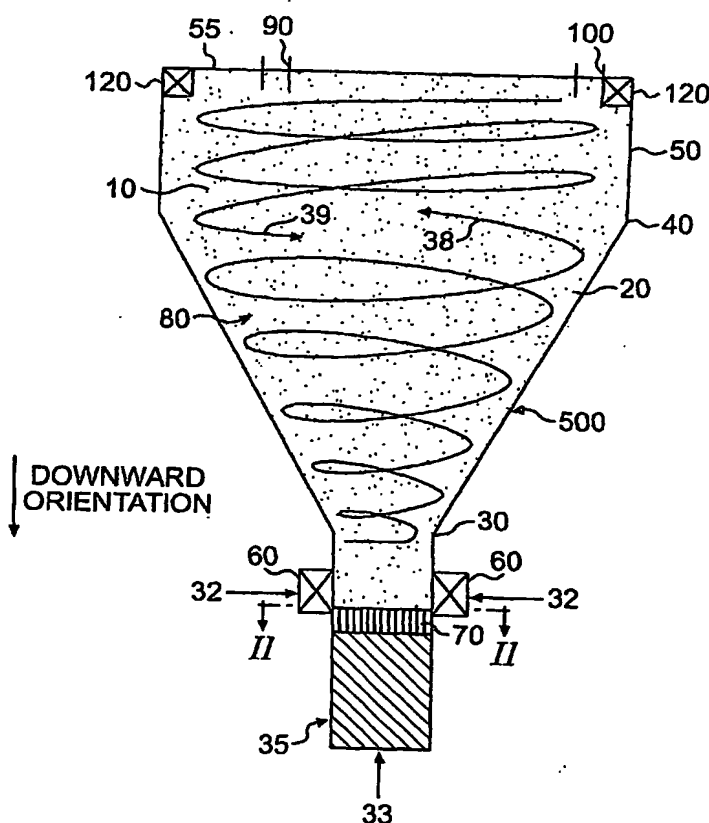
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[Continued on next page]

(54) Title: **VORTEX REACTOR AND METHOD OF USING IT**



(57) Abstract: A vortex reactor is provided. The vortex reactor includes a reaction chamber formed by a frustum-shaped portion, the narrower part of which is downwardly oriented. Proximate to the narrower part of the frustum-shaped portion, the vortex reactor includes apparatus for creating an axial gas flow and apparatus for creating a circumferential gas flow. The vortex reactor also includes a particulate solid inlet for feeding particulate solids to the reaction chamber. The vortex reactor may optionally include apparatus for generating plasma in the reaction chamber by providing a gliding arc electrical discharge in the reaction chamber. Also provided is a method of processing particulate solids using the vortex reactor of the invention. A reverse vortex plasma reactor (TSAPG) is also provided.



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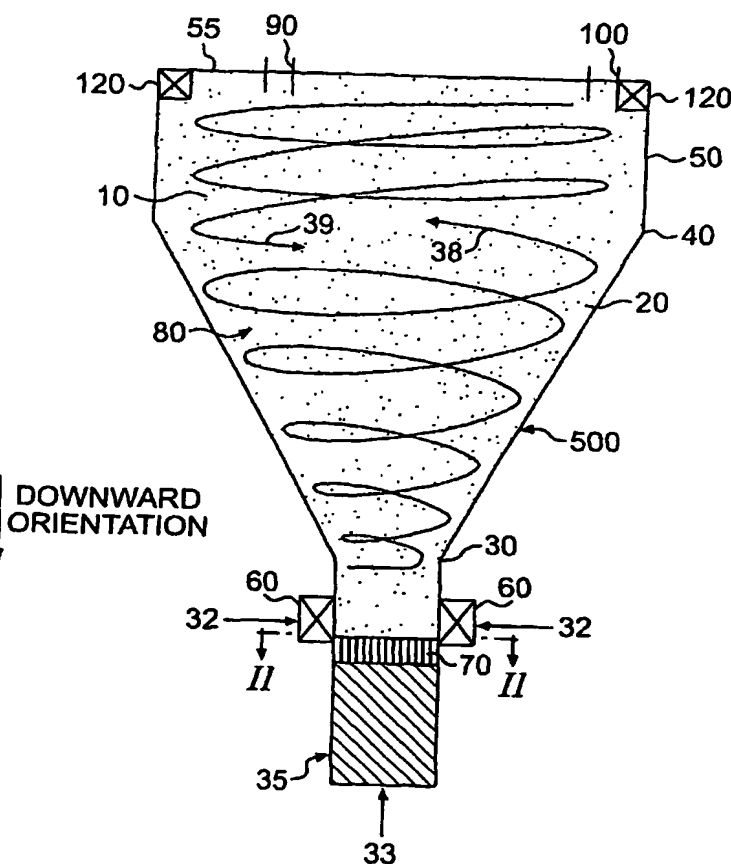
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